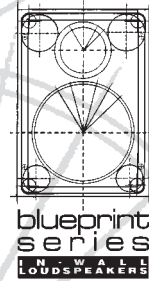


INSTALLATION & OPERATION GUIDE



MODELS
HD·CTR
HD·LRS
HIGH DEFINITION

blueprint
series

IN - WALL
LOUDSPEAKERS®



NILES®

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Introduction

The HD or *High Definition* group of Blueprint Series In-Wall Loudspeakers® offers speakers expressly designed for superior sonic quality. They employ advanced technology components designed to extract the subtle nuances in recorded music or the thunderous action in a movie. They are perfect anywhere that quality of sound is the *most* important consideration.

Features and Benefits

Dolby Digital Ready

The HD•CTR (Center) and HD•LRS (Left/Right/Surround) are specifically designed for Home Theater Sound. They exceed the specifications set forth by Dolby Laboratories for the accurate reproduction of Dolby Digital Encoded Sources.

Directed Sound Field Geometry™ (DSFG)

Both the HD•CTR and HD•LRS employ Niles' Directed Sound Field Geometry (DSFG). With DSFG, the tweeter is offset from the center of the dual woofers. The resulting acoustic interaction between the woofers and the offset tweeter results in the flattest frequency and phase response approximately 15° off-axis from the tweeter. This gives optimum performance to a seated listener even if the loudspeakers are mounted above a built-in TV.

Mica Filled Polypropylene Woofers with Inverted Butyl Rubber Suspension

The unusually stiff and light polypropylene cone is filled with mica to enhance its rigidity for the fastest, most accurate response. Additionally, the use of an Inverted Butyl Rubber Suspension offers substantial benefits including: increased movement without

An HD•CTR or HD•LRS Speaker Kit; CTR•LRS Bracket Kit; and CTR•LRS Frame/Grille Kit are required to install one HD•CTR or HD•LRS In-Wall Loudspeaker in either new or existing construction.

mechanical limitations; weather resistance; and improved midrange damping for better detail and clarity.

ElastoDynamic™ Hybrid Dome Tweeter

Constructed from a composite matrix of elastomers and natural fiber substrates, the ElastoDynamic™ tweeter offers extended high frequency response without any harsh ringing or overshoot.

Video Shielding (HD•CTR)

The HD•CTR utilizes special video shielding to enable it to be installed in close proximity to a video monitor without negative effects on picture quality.

Acoustic Fine Tuning

Both the HD•CTR and HD•LRS feature baffle mounted Acoustic Fine Tuning Controls. The HD•CTR's controls enable optimization of the high frequencies and the Dialog with 3dB of Treble Cut and 3dB of Dialog Enhancement. The HD•LRS's controls enable optimization of both low and high frequencies with 3dB of Bass and Treble Cut.

DSFG Defeat (HD•CTR)

Main/Surround Configuration (HD•LRS)

Both the HD•CTR and HD•LRS feature crossover mounted switches which customize the response of the speaker. In the HD•CTR, the switch controls whether the Directed Sound Field Geometry feature is On or Off. (It is useful to switch it Off when the speaker is installed at ear level, for example, behind a perforated screen). In the HD•LRS, the switch sets the speaker's response for Main (front) or Surround. The Surround setting manipulates the response of the speaker to provide a diffuse sound field.

BumpBack™ Woofer Magnet(s)

Niles engineers have utilized a unique magnet construction allowing far greater "throw" or voice coil excursion. This allows a new level of deep bass performance to be achieved.

X-Matrix™ Reinforced Baffle

The X-Matrix Baffle design uses specially molded ribs to add rigidity to the baffle assembly. The end result is better bass and improved midrange detail.

Absolutely Flush to the Wall Appearance

The unique mounting system of the HD loudspeakers powerfully clamps the frame to the bracket, sandwiching the wall material between them. Because the clamping action is totally uniform around the frame, there are no shadows or gaps between the wall and the frame. Additionally, the Niles mounting system is carefully optimized to stiffen the surrounding drywall and prevent it from resonating. You hear only the music, not the drywall.

Easy Retrofit Installation in your Existing Home

Designed for ease of installation, the Niles mounting system makes retrofit installa-

tions simple and fast. A supplied template assures fast and accurate hole cutting. The bracket slips behind the drywall and the screws secure the bracket to the frame, sandwiching the drywall between them. The speaker baffle attaches to the frame, and the grille mounts over the speaker.

Three Stage Installation System for Remodels or New Construction

You install only the parts you need for a particular stage of construction. When the framing and wiring are finished, you install the *bracket*. After the drywall is up, but before the painter begins to paint, you install the *frame* and provide the rustproof aluminum *grilles* to the painter so that they can be painted to match the surroundings. Only when construction is completely finished do you put the valuable *speaker* in the wall. You don't have to mask or prep the speaker for painting, and worries about theft during the final phases of construction are never an issue!

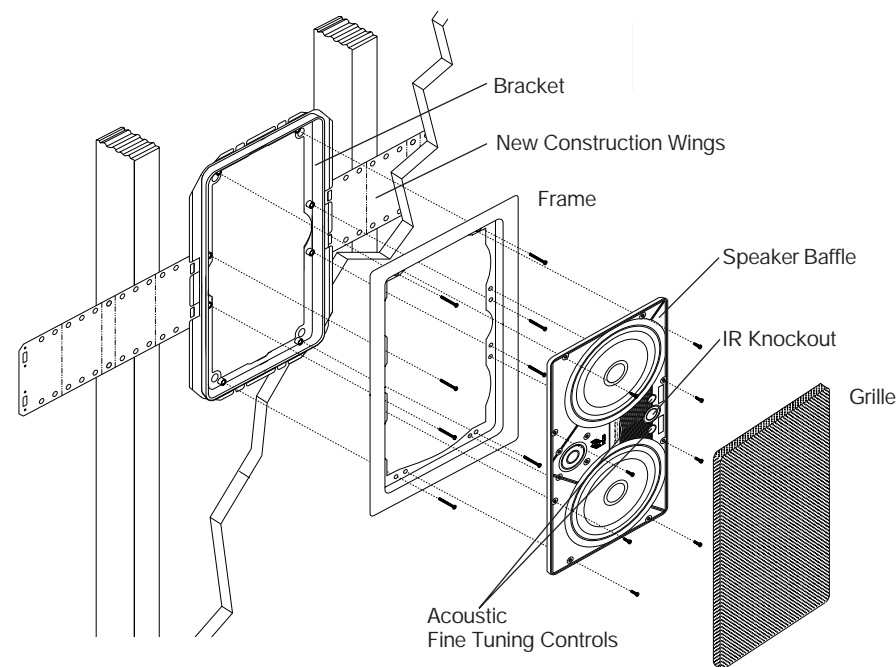
Infrared Sensor Mount

The speaker baffle has a locator designed for the Niles MS-1 MicroSensor,™ a miniature infrared sensor. The MS-1 installs discreetly behind the aluminum grille and therefore minimizes wall clutter in your home. When you want to control your equipment, you simply point your remote control at the speaker from up to 15 feet away.

Low Diffraction, Paintable Aluminum Grilles

HD speakers come standard with aluminum grilles. The grille has hundreds of precisely sized perforations, creating an acoustically transparent grille. The aluminum construction is 100% rustproof.

Figure 1
Model HD•LRS Shown



Installation Considerations

Recommended Amplifier Power

For satisfactory performance, we recommend an amplifier with a power rating of ten to one hundred fifty watts. Curiously, most speakers are not damaged by large amplifiers but by small amplifiers. If your system is playing loudly, a small amplifier will run out of power very quickly. When an amplifier runs out of power it creates damaging "clipping" distortion. A more powerful amplifier will play at the same volume without distorting. See the section on operating the speakers for more information about clipping distortion.

Speaker Wire

Use 2-conductor speaker wire when connecting HD speakers to your receiver or amplifier. For most applications, we recommend you use 16 or 18 gauge wire. For wiring runs longer than 80 feet we recommend 14 gauge wire. The spring loaded terminals of the HD speakers will accommodate up to 12 gauge wire directly. Larger sizes can be accommodated via pin connectors.

When you run wire inside walls, special jacketing (CL-2 or CL-3) is required to both protect the wire and for fire prevention. In some areas conduit is required. For a trouble-free installation, low voltage wire such as speaker wire must be run in accordance with the National Electrical

Code and any applicable provisions of the local building code. If you are unsure of the correct installation techniques, wire jacket or type of conduit to use, consult a professional audio/video installer, your building contractor, or the local building and inspection department.

Incorporating a Remote Control

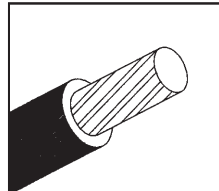
If you are planning to use a stereo system with a hand held IR remote control, consider the advantages of installing a Niles IR Repeater system. You are able to control all of the functions of your system from the room with the remote pair of speakers. Niles makes a number of IR sensors which install in the wall, in the ceiling, in cabinetry, on tabletops, or even behind the grille of your Niles HD speakers.

An IR sensor requires that a 2-conductor shielded wire (West Penn D291 or equiva-

lent) be home run from each sensor location to the main equipment location. This wire is normally run beside the speaker wire at the same time. Typically, the sensor is placed in a location that faces your listening position. Most remote controls will have an effective line of sight range of 18 to 30 feet with any Niles sensor placed in a wall, ceiling, on a cabinet or tabletop. However, when you place a Niles MS-1 MicroSensor behind the perforated aluminum grille of a speaker the effective range is reduced to 9 to 15 feet.

Insulating the Wall Cavity

For best performance from your speakers fill the wall cavity behind the speaker with fiberglass insulation (e.g. R-19 unbatted insulation). Try to keep the same amount of insulation for each speaker, particularly in the same room, for consistent bass response.



TECH TIP
Wire size is expressed by its AWG (American Wire Gauge) number. The lower the number, the larger the wire, i.e. twelve AWG is physically larger than fourteen AWG.

Speaker Placement

Placement of the Front Left and Right Speakers (HD•LRS)

In a home theater, the intelligibility of dialog and action reproduced by the front speakers is paramount! The position of the speakers plays a very important role in how clear the sound is and how a stereo image is created. Here are some guidelines to make the process of placement quick and easy.

Make sure the sound will not be blocked or reflected off of furniture or other objects. You should have a direct line of sight with the front of the speaker. To determine the best position, measure the "listening" distance between the ideal listening position (your favorite chair or couch) and the wall in which you plan to install the speakers.

Try to place the speakers so that they are equally distant from your listening spot and at least one half of the listening distance apart (this maintains a large pleasant stereo "image"). In home theater applications where there is a center channel you may choose to space the left and right main speakers farther apart for a "bigger than life" sound with Dolby® encoded movies and TV shows. However, for combined music and movie usage stay within the *good placement zone* for music. For example; if you are ten feet back from the wall, the speakers should be between five and ten feet apart (See Figure 2).

The front left and right speakers should be placed on either side of the picture source at a height that allows their tweeters to be not more than 24 inches above or below the tweeter in the center channel speaker (See Figure 3). Be careful that you do not place

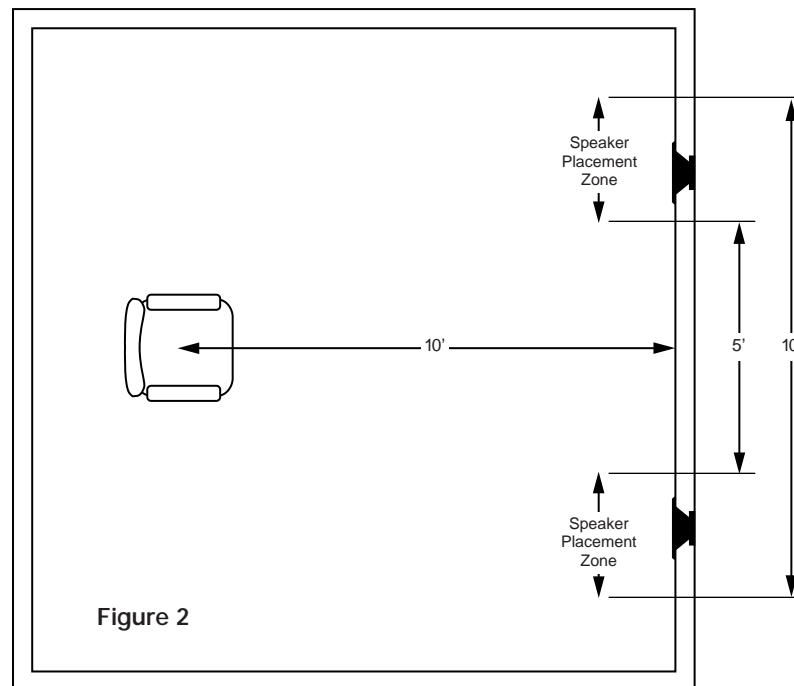


Figure 2

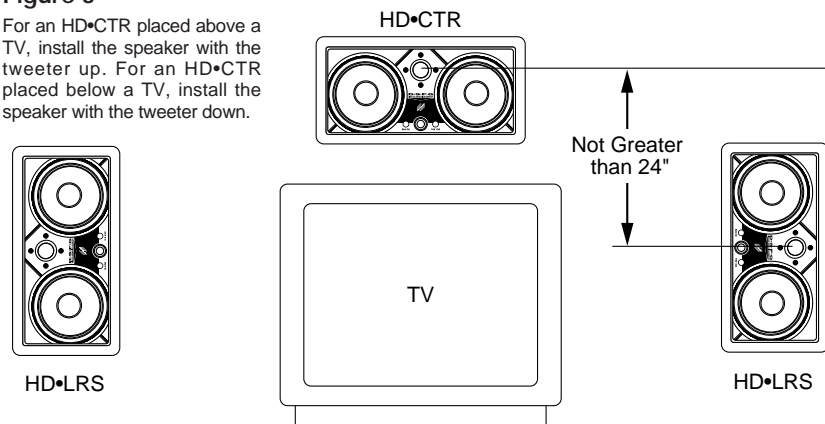
the HD•LRS too close to a direct view TV monitor as they may cause picture discoloration (HD•CTR may be substituted for HD•LRS in such an installation). In general, try to keep an HD•LRS at least 24 inches away from the TV. With larger CRT screen sizes, you should test for picture degradation before installing.

The Boundary Effect

Corners can affect the bass response of the speaker powerfully! This is called the boundary effect. You will emphasize particular bass frequencies and cancel out other bass frequencies when you place speakers close to the wall/ceiling boundary or a corner wall boundary. This can make the speaker sound excessively boomy and inaccurate to some listeners, while to others it just seems like more bass sound. A good rule of thumb is if you always listen to your current pair of speakers with the bass turned up, you'll enjoy corner placement. If you keep your tone controls at neutral, try to keep the speakers at least one or two feet from the boundaries of the room. The HD•LRS features a front baffle-mounted adjustment switch labeled "Bass Cut" which enables you to compensate for the boundary effect by reducing bass output by 3dB.

Figure 3

For an HD•CTR placed above a TV, install the speaker with the tweeter up. For an HD•CTR placed below a TV, install the speaker with the tweeter down.



Placement of the Center Channel Speaker (HD•CTR)

The center channel speaker is the workhorse in a home theater system. It handles all of the critical dialog and as such it is vitally important in creating the illusion of sounds emanating directly from the picture.

The HD•CTR is specially optimized for this important job. Its dual Magnetically Shielded woofers enable it to be placed directly adjacent to a direct view television without affecting picture quality. In a typical installation, the HD•CTR will be placed horizontally, directly above the television or projection screen. Try to insure that the speaker is not placed too high relative to the left and right speaker. (See Figure 3).

For installations where a perforated projection screen will be used, optimum performance can be obtained by placing the HD•CTR, either horizontally or vertically, behind the screen at ear level. (See Figure 4). When placed at ear level, the HD•CTR's crossover configuration switch should be set to "DSFG Defeat". (See the section on Defeating DSFG on page 18 for more details).

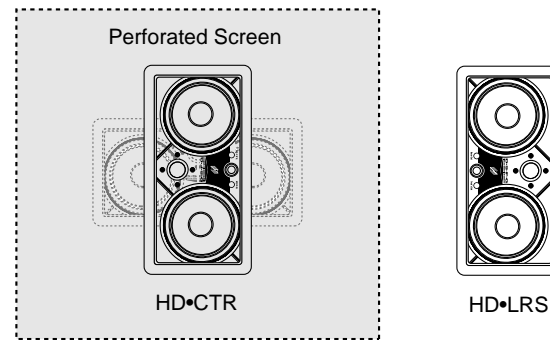


Figure 4

Placement of the Rear Channel Speakers (HD•LRS)

In a home theater, the goal is to reproduce the experience of a great movie theater in our homes. The biggest difference between your home and the theater is the surround speaker array. In a commercial theater, it is not uncommon to see twenty or thirty speakers around the audience. This huge array of speakers assures that you will feel completely surrounded by the ambient soundtrack of the movie. Film makers try to use the "surround" soundtrack to envelope you in the environment on screen. They will place background music, rain sounds, traffic noise, etc. on the "surround" sound-

track. In a home with a single pair of speakers it is easy for the jungle sounds to sound like they are "in the middle of your head" just like headphones!

A single pair of HD•LRS Loudspeakers, properly placed, can create a very convincing simulation of an array of speakers. If you place them near a hard reflecting surface you can make one pair of speakers sound like several. Create as many reflections as possible by mounting the speaker up high in the wall so that the ceiling will act as a powerful reflector. (See Figures 5 and 6). If you mount the speakers as far away as you can from the listening area, more reflections will occur. However, all

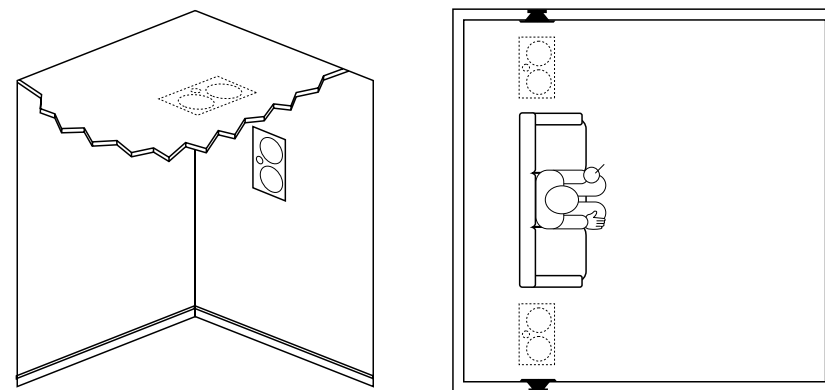


Figure 5

If the primary listening position is towards the back of the room as depicted in figure 5, place the rear speakers high up on the side wall or in the ceiling as pictured.

of these placement techniques require that you work your surround sound amplifier channels harder. If the surround sound system you are using has a small five or ten watt amplifier for the rear speakers, stay within five to eight feet of the listening location. If you are using a 25 to 50 watt amplifier you can mount the speakers 10 to 15 feet away from the listening location and still achieve reasonably high volume levels.

Of course, the best way to emulate the sound of multiple speakers is to use multiple speakers. In large or unusually shaped rooms this might be the only way to achieve a good effect. (See Figure 7).

If you like to listen to music surround modes which emulate concert hall acoustics, more than two surround speakers will prove extraordinarily effective. With Niles HD•LRS loudspeakers it is easy to add another pair without affecting the decor of the room. However, you will need to use a much more powerful amplifier than that which is built into a typical surround sound receiver or amplifier. Niles makes a number of Systems Integration Amplifiers™ with proprietary features that make them uniquely suited to enhance a good surround sound system. Consult your Niles dealer for more information.

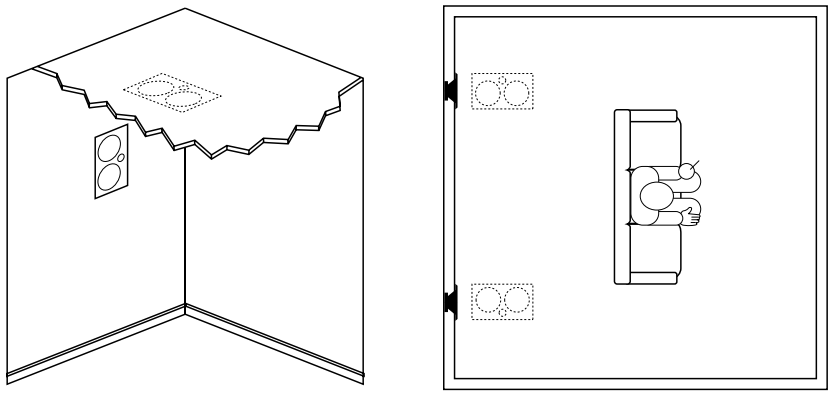


Figure 6
If the primary listening position is towards the center of the room as depicted in figure 6, place the rear speakers high up on the rear wall or in the ceiling as pictured.

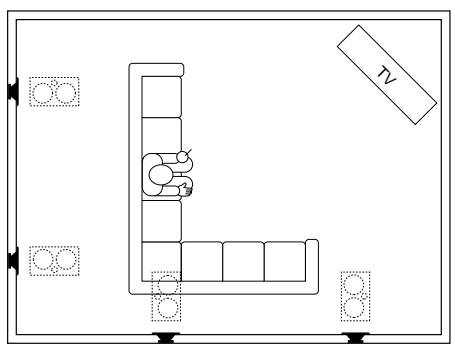


Figure 7
If you use multiple rear speakers or have an irregularly shaped listening area as shown in figure 7, place the speakers high up on the rear and side walls or in the ceiling as pictured.

Installation Fundamentals

Running the Speaker Wire in New Construction

If you have doubts about whether you are capable of installing a Niles Blueprint Series In-Wall Loudspeaker, consult a Niles dealer or professional installer. They have special tools, techniques, and experience to make the impossible possible. The installer can provide you with an estimate before any work is done.

Scheduling and Preparation

Plan to schedule the speaker wiring after the electrical wiring is finished. That way you can avoid wire routes which could potentially induce hum over the speaker wire. The basic rules are:

- Never run speaker wire through the same hole as an electrical cable.
- Never run speaker wire into the same J-box as electrical cable.
- Avoid running the speaker wire beside the electrical cable. Keep it at least three or four feet distant from any electrical power cable.

Side-by-side wiring is unavoidable in particular spots in every house, just move the speaker wire route away as soon as possible. If construction forces a side by side run for more than ten feet, install metal conduit or shielded speaker wire. Low-voltage wires such as doorbells, intercoms, telephone, security, or television cannot cause interference or hum on your speaker wires, so you can safely run all of them at the same time, through the same holes, side-by-side.

Before you drill any holes, mount the speaker brackets in the desired speaker locations and mount p-rings or open backed J-boxes where the in-wall volume controls and stereo equipment will be.

Safety First!

Wear gloves, safety goggles and head protection when drilling. Avoid nails, they ruin bits and they can create injury. Pay particular care when using "hole-hogs" and other powerful electric drills; the torque of the drill when suddenly stopped by a nail can break the wrist of a strong man.

Drilling

Use a bit that is large enough for the wires you plan to run. An auger bit is the preferred bit for rough-in wiring. It will actually pull itself through the wood, so that the drill motor, not you, does most of the work. You will be drilling a lot of holes, so this is important.

Always drill the holes in the center of the stud. If you have to notch the stud or drill the hole closer than one inch from the edge of the stud, protect the wire with a nail plate. (See Figure 8).

When drilling holes in ceiling joists drill in the center of the joists and try to locate the hole near the end of the joist. DO NOT drill through a "gluelam" or any load bearing beam without the direction of your contractor.

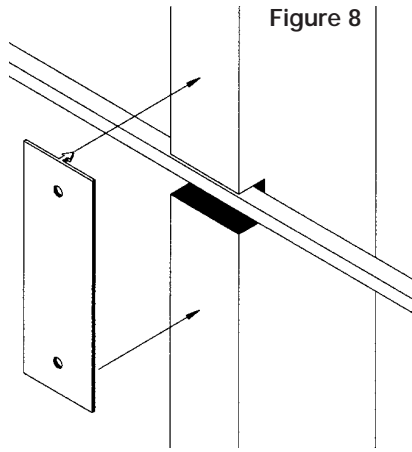


Figure 8

Try to line the holes up perfectly, because it makes pulling the wire much easier. A good technique is to snap a chalk line across the face of the studs or against the bottom of the ceiling joists. Then work backward so that you can always see the holes you have already drilled. Paying careful attention to this will save you a lot of time later on!

Pulling the Cable

Pull the cable in sections (from the stereo to the volume control, from the volume control to the speaker). Start with the longest sections and use left-over wire to complete the short sections. If you plan to pull many rooms at the same time through a central route, walk off the distance to each destination, add a generous fudge factor for turns and other obstacles, then cut off each section so that you have a bundle of wires you can pull at once.

Whenever you run the wire further than four and one half feet from a hole in a stud or joist (open attic space, going up walls, etc.), fasten the wire to the joists or studs using cable clamps or appropriately sized wire staples. The wire should not have large sags in it, nor should it be too tight. Try to protect the wire from being stepped on in attics or other unfinished crawl spaces. There are guard strips, raceways and conduits which can be used to protect the cable. Consult the local building code for special requirements in your area.

Concealing Speaker Wire in Existing Walls

This is actually a fairly simple task if you restrict your choice of speaker locations and wire routes to the interior walls or ceilings of your home. Interior walls in almost all North American residences are hollow, so that it is easy to flush mount speakers into them and route new speaker cable around the house. What you see

when you look at the painted wall board, plaster, or paneling is only the skin of the wall. Behind the skin is the skeleton; two-by-four wood or metal “studs” running vertically from the floor to the ceiling in walls and two-by-six or larger “joists” running horizontally in the ceilings and floors. In between the studs and the joists is the space for the wiring and plumbing of your home.

Exterior walls are different. They must insulate the house from the heat and cold outside, so they are stuffed with insulation. The national building code requires that the hollow wall space in exterior walls be broken by a horizontal stud placed between the vertical studs. This “fire blocking” makes it very difficult to retrofit long lengths of wire. In some areas of the country the exterior walls are constructed of solid masonry, and have no hollow space for speakers or wires.

Start by examining all the possible routes you might take to run the speaker wire from the speaker to the stereo. Use a stud sensor or other device to locate the internal structure of the wall. You want to avoid all studs or joists. A typical route would be: from the speaker location up the inside of the wall to a new hole drilled into the top “plate” (horizontal two-by-four at the top of the inside of the wall), into the attic crawl space, and down another plate to the wall behind the stereo system itself (See Figure 9). The other very common route is through the bottom plate of the wall into an unfinished basement or crawl space.

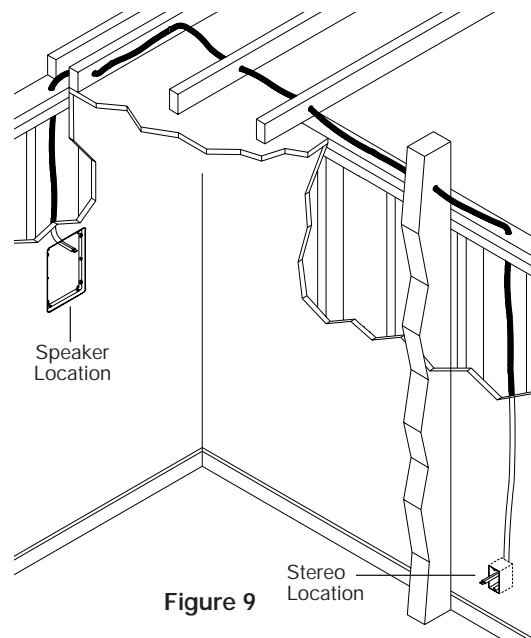


Figure 9

Identify where all of your electrical, phone, and TV wiring is likely to be and plan to route around it all. You can accidentally induce 60 Hz hum on your speakers if you run your speaker wire right beside electrical wire for more than a few feet. Try to keep speaker wire running parallel to power cables at least 3 feet away. To find exactly where an electrical cable is routed, try inspecting the inside of the wall by turning off the breaker for a particular power outlet or switch, removing the

cover plate and switch or receptacle, and shining a penlight into the wall. If you have access to an attic or basement space you can quickly see which part of the wall space the wire is free of obstructions (See Figure 10).

When you don't have access above or below the wall, try to estimate the existing wire and pipe locations from the positions of electrical outlets and plumbed fixtures on both sides of the wall. Take a look at the outside of your house too, sometimes conduit, vents or drain pipe will be visible that give useful information. Choose the route with the fewest potential obstacles.

If your house is built on a slab or you are wiring between two finished floors, look for baseboards which could be removed and replaced with the wire behind them. Doorjamb can be removed and often have enough space for speaker wire all the way around the door (See Figure 11).

Sometimes, an under-the-carpet run is possible (there are special flat speaker wires made for under-the-rug wire runs). As a last resort, heating and air conditioning vents can be used as wire raceways for

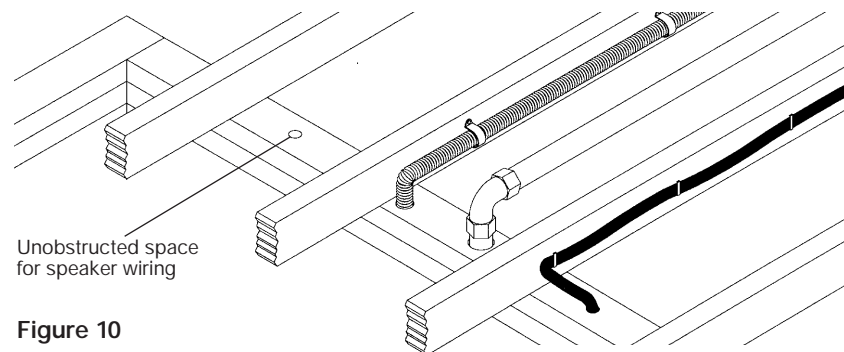


Figure 10

plenum rated wire (check your local building codes, some municipalities require conduit).

In traditional wood stud/drywall construction you can cut the hole for the speaker and utilize the large hole to auger holes across, up or down the wall for as far as your drill bit will take you. If you have matching paint and take reasonable care in patching you can cut a hatch in the drywall at each stud, run your wire, and patch and touch-up the wall (See Figure 12).

When you are dealing with the unknown because of the structure of your home, or with difficult to patch wall materials like plaster, lath and plaster, faux finishes, wallpaper etc., be patient. A careful study of the potential problems before you start the job will pay off.

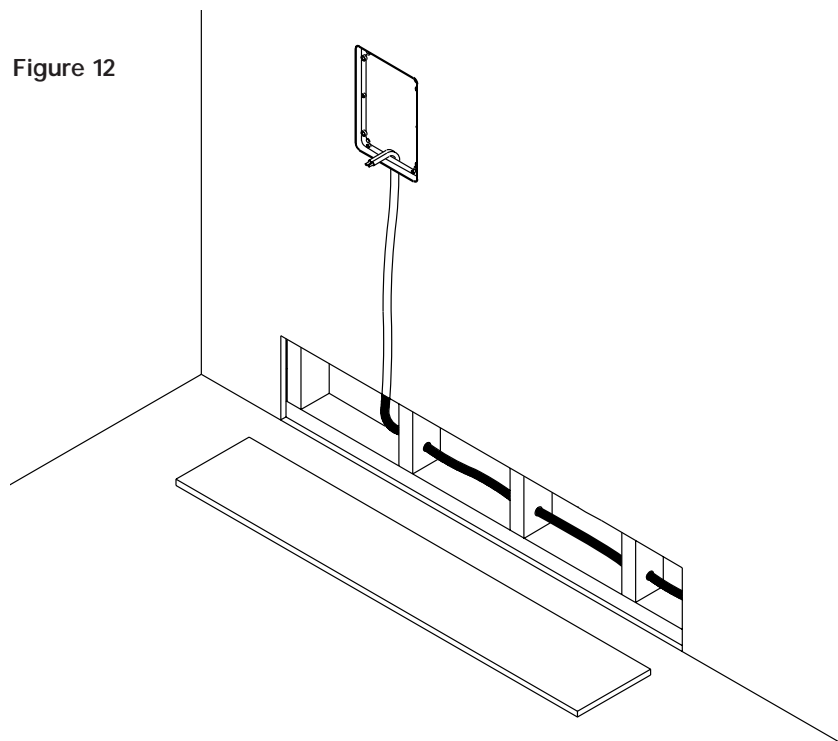


Figure 12

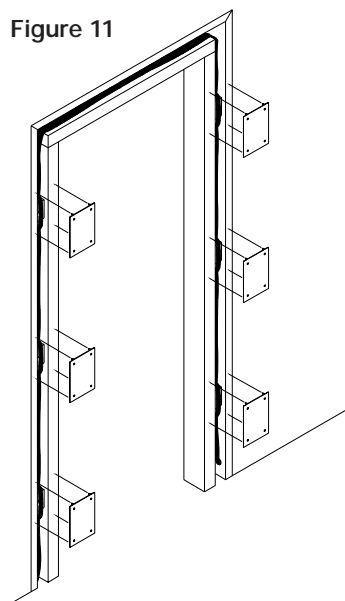


Figure 11

Installation of Brackets, Frames and Grilles in New Construction

Stage One: Before Drywall is Hung Insulating the Wall Cavity.

If feasible, fill the wall cavity with insulation at this point.

Attach the wings to the bracket by snapping them into the sides of the bracket. The wings can be shortened by breaking them along the scored lines if their length will interfere with a corner or eaves. You can mount the bracket horizontally or vertically (See Figure 13).

Screw one side of the assembled bracket with wings to the stud using one of the supplied screws. Level the bracket. Screw the other side of the bracket to the stud. Two screws on each side makes for a very secure installation. Attach the wire to the bracket at the indicated wire tie points (See Figure 14).

Stage Two: Before Paint

Screw the frame to the installed bracket using the supplied screws. Do not over-tighten the screws. This will distort the frame and the grilles will not fit (this is not permanent, just loosen the screws and the grille will pop in) (See Figure 15).

Painting the Aluminum Grilles

The grille is important to the sound of the HD loudspeakers. Do not fill the holes of the grille with paint.

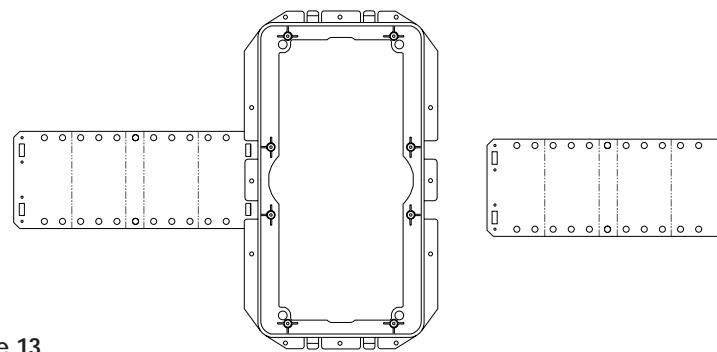
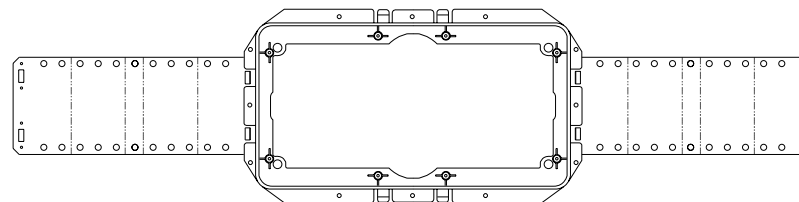


Figure 13



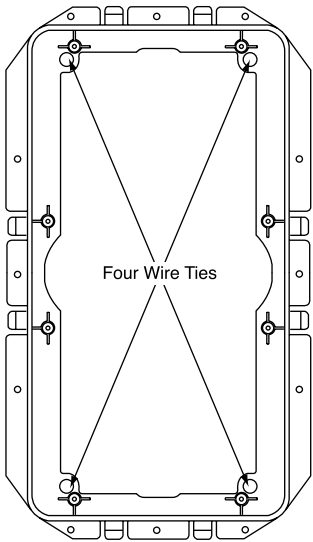


Figure 14

The grille is constructed of aluminum with a perfectly even powder coat overall. This powder coat is an ideal primer.

Remove the grilles before painting. If you are using spray paint, use two thin coats without any primer. If you are using a compressor and a spray gun, use the finest, most diffuse setting. Practice first on some paper if you have no experience painting with spray paint.

If you are using an applicator or brush, and a can of paint, thin the paint first. You do not want to have to poke hundreds of holes in your beautifully painted grilles.

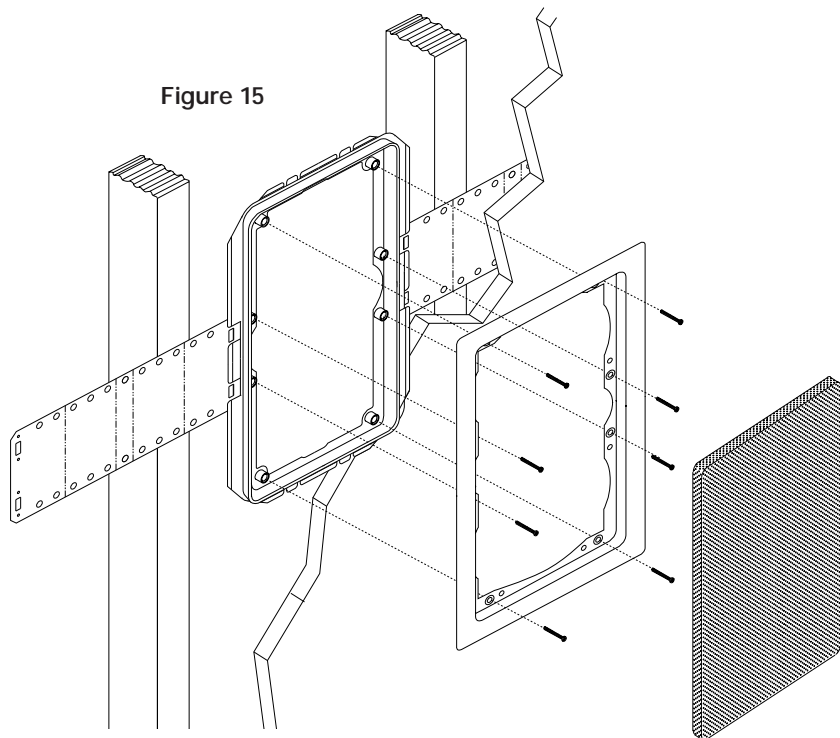


Figure 15

Installation of Brackets, Frames and Grilles in Existing Walls

IMPORTANT: Before you cut into any wall, review the sections on running wire and speaker placement.

1. Drill a 1/8" pilot hole just barely through the wallboard or dry wall (1/2" to 5/8" deep in most homes) about an inch below the center of your proposed speaker location (an inch to the side if you are mounting the speaker horizontally). BE VERY CAREFUL NOT TO DRILL THROUGH EXISTING WIRES, PIPES, OR STRUCTURE. IF YOU FEEL ANY EXTRA RESISTANCE AS YOU ARE DRILLING, STOP. Cut a piece of coat hanger equal to the width of the bracket. Bend the wire in half creating a right angle. Poke the "L-shaped" wire into the pilot hole and turn it

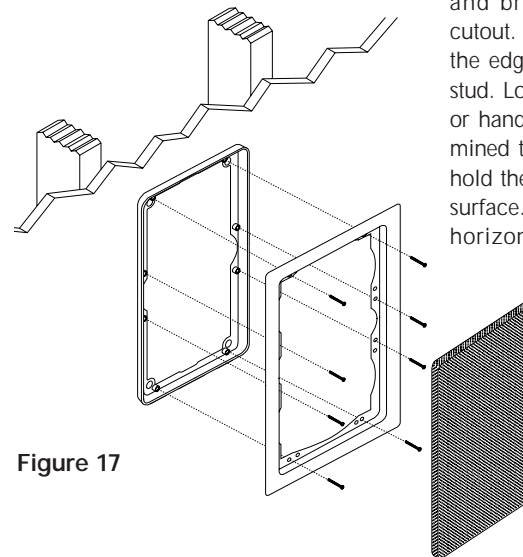
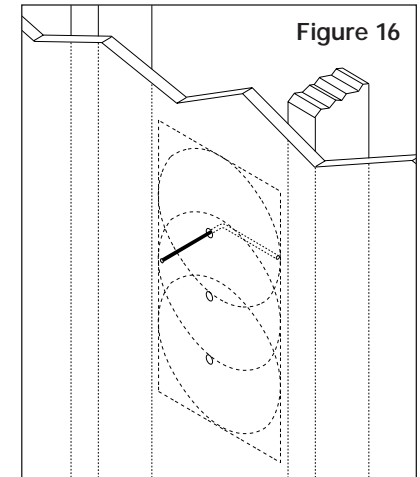


Figure 17



in a complete circle. If it turns freely, repeat the procedure from a hole about an inch above the center of your proposed speaker location (See Figure 16).

If the wires movement is obstructed by a pipe or cable, fill the hole(s) with spackle or other patching compound and try another location.

2. When determining the final location of the cutout keep in mind that the frame and bracket will extend beyond the cutout. Make sure that you do not place the edge of the cutout directly next to a stud. Locate the studs using a stud sensor or hand-knocking. Once you have determined the correct position for the cutout, hold the supplied template up to the wall surface. Level the template in either the horizontal or the vertical position and mark the wall with a pencil. Drill the four corners with a 1/4" drill bit.

3. If you are cutting a painted or wall papered drywall use a sheetrock or keyhole saw. Cut the hole with the saw at a 45 degree angle. That way,

the drywall section can be replaced cleanly if there is an unseen obstruction behind the wall. **BE VERY CAREFUL NOT TO SAW THROUGH EXISTING WIRES, PIPES, OR STRUCTURE. IF YOU FEEL ANY EXTRA RESISTANCE AS YOU ARE CUTTING, STOP.**

4. If you are cutting into lath and plaster walls, use masking tape to outline your penciled marks, drill the four corners with a 1/4" bit and use a razor to score the plaster down to the lath beneath. Then use a chisel to remove all of the plaster within the taped outline. Finally, insert a metal cutting blade into a sabre saw and very slowly and carefully saw the lath. Sawing the lath can easily vibrate plaster off the wall. If you have the patience, use a pair of tin snips to slowly nip away at the lath instead. There is no risk with this method, it is just time consuming.

5. Fill the wall cavity with insulation at this point. Remember to use equal amounts of insulation for each speaker.

6. Slip the mounting bracket through the hole and pull it toward you so that its front edge slides into the hole and stops in place.

7. Attach the frame to the bracket by screwing the frame to the bracket using the supplied screws. Do not overtighten the screws, this will distort the frame and the grilles will not fit (this is not permanent, just loosen the screws and the grille will pop in). The screws should pull the frame and bracket together (sandwiching the drywall) so that the frame is absolutely flush with the wall surface. There should be no gaps between the wall and the frame (See Figure 17).

Installation of the Speaker and Grille in New or Existing Construction

Speaker Orientation for Directed Sound Field Geometry

The Directed Sound Field Geometry (DSFG) provides optimum off axis phase and frequency response due to the acoustic interaction between the woofers and the tweeter. The flattest response will be obtained approximately 15 degrees off axis in the direction opposite the tweeter. Therefore, the orientation of the speaker is important for optimum performance. For an HD•CTR placed above a TV, install the speaker with the tweeter up. For an HD•CTR placed below a TV, install the speaker with the tweeter down. For HD•LRS's placed in the front, install the speakers with the tweeters facing out.

Setting the Acoustic Fine Tuning and Configuring the Crossover

Both the HD•CTR and HD•LRS models feature front-mounted Acoustic Fine Tuning controls and crossover mounted configuration switches.

HD•CTR Acoustic Fine Tuning

The front-mounted switches on the HD•CTR enable the speaker to be optimized regardless of positioning or room acoustics by providing 3dB of Treble Cut and 3dB of Dialog Enhancement. Start by listening to the speaker in the normal mode (switch is in the "out" position). If the sound seems to have too much treble, depress the switch labeled Treble Cut to reduce the amount of high frequencies.

If you desire to make the dialog in a movie more pronounced, depress the switch labeled Dialog Enhance.

Defeating DSFG

The crossover on the back of the HD•CTR enables you to defeat the Directed Sound Field Geometry (DSFG) feature. This is useful when the speaker is mounted at ear level directly in front of the primary listening position as would be the case when the speaker is mounted behind a perforated projection TV screen.

HD•LRS Acoustic Fine Tuning

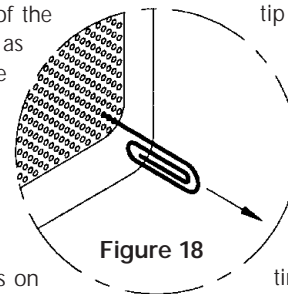
The front-mounted switches on the HD•CTR also enable the speaker to be optimized regardless of positioning or room acoustics. They provide 3dB of Treble and Bass Cut respectively. Start by listening to the speaker in the normal mode (switch is in the out position). If the sound seems to have too much treble, depress the switch labeled Treble Cut to reduce the amount of high frequencies. If the sound has too much low frequency output (because it is placed near a corner perhaps) depress the switch labeled Bass Cut to reduce the bass by 3dB.

Main/Surround Configuration

The crossover on the back of the HD•LRS enables you to configure the speaker for best performance as either a front "main" speaker or rear "surround" speaker. When the HD•LRS is used as a surround speaker, set the switch to the "Surround" position to provide a diffuse sound field which provides a more convincing illusion of sound all around the listener. When configured as a surround speaker, the orientation of the tweeter is no longer critical.

Installing a Niles MS-1 MicroSensor™

There is a 1/2" round molded "IR Sensor Knockout" on the face of the speaker baffle. To prevent damage to the crossover network you must remove the knockout from the rear of the speaker. Do not attempt to remove the knockout with the speaker face up. Lay the speaker face down on a clean carpet or rug. Put the tip of a screwdriver into the center of the round "knockout" and sharply tap the screwdriver handle as necessary. Install the MS-1 using its mounting hex nut and washer so that it is tightly secured to the speaker. Connect all wires and continue your installation.



Installing the Speaker

If the grille is already installed, remove it by using a bent paper clip or the tip of a corkscrew and pulling it away from the frame (See Figure 18).

1. Separate the speaker wire so that at least two inches of each conductor are free.
2. Strip one half inch of insulation from the end of each conductor of the speaker wire.
3. If you have gold pin connectors which you wish to use, affix them to the stripped wire ends now.
4. Connect one stripped wire end (or connector) to the black and one to the red terminal. Pay attention to the markings on the wire. Each speaker must be connected to the amplifier in the same way.
5. Place the speaker baffle in the frame and secure it with the supplied #8 x 1/2" screws. If you find that the baffle does not smoothly fit the frame, slightly loosen the mounting screws that hold the frame to the bracket.
6. Carefully fit the grille into its recess so that it is barely in place. Starting with one

corner, go around the speaker, pushing the grille in a little bit each time. You should be gentle, the aluminum grille can be easily bent out of shape. The speaker will have an absolutely flush appearance when it is fully in place.

Speaker Phase

Speaker wire has two conductors. One conductor is attached to the negative (-) terminals and one conductor is attached to the positive (+) terminals of both your speaker and your amplifier. Usually, the wire is marked for your convenience. There are different ways wires are marked: a stripe on one wire, a ribbed area of one conductor you can only feel, different colors of metal wire on each conductor, or there might be a fabric strand or string wound into one of the conductors. Of course, there are some wires which appear completely identical. Be careful, or you might make a mistake.

If you make a mistake, one speaker will be playing "out-of-phase" with the other speaker. An out-of-phase pair of speakers work against each other and the sound of the two speakers playing together will be lacking in bass and be "phasey" sounding. If you suspect the sound is not right and you cannot see any markings on the wire, try this simple test:

1. Stand half way between the two speakers.
2. Play some music with the amplifier or radio set to Mono.
3. Listen to the richness of the bass and the loudness of the sound.
4. Turn off the amplifier and reverse the connections on one amplifier channel only.
5. Repeat the listening test with the same setting of the volume control. When the sound has a richer bass and is slightly louder the speakers are working together or "in-phase".

Operation

Listening at Higher Volumes

It requires more power to achieve a reasonable volume of sound in a large room than it does in a small room. It is possible (even if you are not a teenager) to turn the volume so high that the amplifier *runs out of power*. This creates "clipping" distortion.

Clipping distortion makes treble sound very harsh and unmusical. When you hear harsh sounding treble from any good speaker, turn the volume down immediately! Those harsh sounds are masking some much more powerful ultra-high-frequency sound spikes which will quickly damage any fine loudspeaker. You are much less likely to damage a speaker with a large amplifier because it will be very loud indeed before it produces any clipping distortion.

Cleaning

You can clean the speaker with a dampened soft cloth or paper towel. If the speaker is mounted high up on a wall or ceiling, use a broom to gently brush it off.

Specifications

Model HD•CTR

Driver Compliment
 (2) 5-1/4" Magnetically Shielded Mica Filled Polypropylene Woofers
 1" ElastoDynamic™ Hybrid Dome Tweeter with Fluid cooling

Design Principle
 Infinite baffle for large and varying air volumes. Directed Sound Field Geometry™ for optimum phase and frequency response

Recommended Amplifier Power
 Ten to One Hundred Fifty Watts per Channel

Nominal Impedance
 8 Ohms

Frequency Response
 45 Hz to 21,000 Hz, plus or minus 3 dB (on axis)

Sensitivity
 90 decibels for 2.83 volts of Pink Noise, measured at 1 meter on axis

Overall Exterior Frame Dimensions
 8-1/4" x 14-1/2"

Depth Behind Wall
 3-1/8" (Assumes 1/2" drywall)

Wall Cut-Out Dimensions
 7-1/8" x 13-1/4"

Wiring Requirements
 We recommend 16 to 18 gauge for up to 80 feet, 14 gauge for up to two hundred feet. Connectors accommodate 12 to 22 gauge wire.

Model HD•LRS

Driver Compliment
 (2) 5-1/4" Mica Filled Polypropylene Woofers
 1" ElastoDynamic™ Hybrid Dome Tweeter with Fluid cooling

Design Principle
 Infinite baffle for large and varying air volumes. Directed Sound Field Geometry™ for optimum phase and frequency response

Recommended Amplifier Power
 Ten to One Hundred Fifty Watts per Channel

Nominal Impedance
 8 Ohms

Frequency Response
 45 Hz to 21,000 Hz, plus or minus 3 dB (on axis)

Sensitivity
 90 decibels for 2.83 volts of Pink Noise, measured at 1 meter on axis

Overall Exterior Frame Dimensions
 8-1/4" x 14-1/2"

Depth Behind Wall
 2-5/8" (Assumes 1/2" drywall)

Wall Cut-Out Dimensions
 7-1/8" x 13-1/4"

Wiring Requirements
 We recommend 16 to 18 gauge for up to 80 feet, 14 gauge for up to two hundred feet. Connectors accommodate 12 to 22 gauge wire.

Limited Warranty

Niles Audio Corporation ("NILES") warrants its loudspeaker products to the original purchaser to be free of manufacturing defects in material and workmanship for a period of two years from date of purchase.

This Warranty is subject to the following additional conditions and limitations. The Warranty is void and inapplicable if NILES deems that the product has been used or handled other than in accordance with the instructions provided by the manufacturer, including but not limited to damage caused by accident, mishandling, improper installation, abuse, negligence, or normal wear and tear, or any defect caused by repair to the product by anyone other than NILES or an authorized NILES dealer.

To obtain warranty service, take the unit to the nearest authorized NILES dealer, who will test the product and if necessary, forward it to NILES for service. If there are no authorized NILES dealers in your area, you must write to NILES and include your name, address, model and serial number of your unit, along with a brief description of the problem. A factory Return Authorization Number will be sent to you. **DO NOT RETURN ANY UNIT WITHOUT FIRST RECEIVING WRITTEN AUTHORIZATION AND SHIPPING INSTRUCTIONS FROM NILES.**

If the above conditions are met, the purchaser's sole remedy shall be to return the product to NILES, in which case NILES will repair or replace, at its sole option, the defective product without charge for parts or labor. NILES will return a unit repaired or replaced under warranty by shipping same by its usual shipping method from the factory (only) at its expense within the United States of America. **THERE ARE NO OTHER WARRANTIES, INCLUDING WITHOUT LIMITATION, EITHER EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE PRODUCT.**

REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE CONSUMER/PURCHASER. NILES SHALL NOT BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES EXCEPT TO THE EXTENT PROVIDED (OR PROHIBITED) BY APPLICABLE LAW.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

For the name of your nearest authorized NILES dealer contact:

NILES AUDIO CORPORATION
 P.O. BOX 160818, Miami, Florida 33116-0818.

Please fill in your product information and retain for your records.

Model _____

Serial No. _____

Purchase Date _____